MANAGEMENT ISSUES

As a result of the highly dynamic nature of inlets and their adjacent shorelines, measures are being taken to responsibly manage development around inlets. One significant measure which is undergoing review by the North Carolina Division of Coastal Management is the redefinition of Inlet Hazard Areas, which include the ocean beaches adjacent to inlets where the rate of shoreline change is more rapid and variable than on other ocean beaches. Within these newly defined Inlet Hazard Areas, shoreline setback regulations are being revised to account for the high variability in shoreline erosion and accretion.

Additionally, there are some controversial measures that are being explored by local communities to "stabilize" the inlets and adjacent beaches. These proposals include sand mining of the ETD to nourish beaches and installing terminal jetties on one or both sides of the inlets to stabilize the inlet. However, these measures would interrupt the natural sand transport mechanism and alter the sediment budget, destabilizing the inlet and diminishing the quantity of sand available to the backside of the island for back-barrier island maintenance. Ultimately, these endeavors lead to increased erosion and narrowing of the barrier island (Fig. 23). Another controversial management issue involves the dredging of the ebb channel to maintain a fixed navigation channel. If the dredge spoil sediment has the appropriate characteristics, it is sometimes used to nourish beaches adjacent to the inlet. However, frequently the most cost effective method of dredge spoil disposal is to deposit it offshore, where it may be lost from the beaches. Furthermore, the dredged navigation channel interrupts the natural sand bypassing process, and may result in the deposition of sand farther offshore and at greater depths than under natural conditions, resulting in a decrease of sediment available for the beaches (Pilkey et al. 1998). The net effect of removing this sand is an increase in shoreline recession rates.

Inlets adjust naturally to changing hydrodynamic conditions imparted by climate change, including storms and sea-level rise. Inlet adjustment is a natural process that only becomes a "hazard" or "natural disaster" when human structures and infrastructure are in the way. Responsible management of the inlet resources means designing policies and infrastructure that are adaptive to the changing conditions. For example, instead of building bridges across the inlet throat, which naturally migrates rapidly due to high current activity, they could be built across the FTD and shallow water platform (i.e., the Hatteras Flats) behind the islands where sediments are more stable. Instead of closing newly formed inlets, they should be allowed to remain open at least long enough to build a substantial FTD for the long-term maintenance and stability of the barrier island. Access across inlets could be accommodated by high speed ferries such as those described by Riggs et al. (2008). A sustainable coastal infrastructure necessitates the ability to be flexible as opposed to static; to be able to change and adapt to the natural dynamics of the coast. It is these natural dynamics and the constant change that provide the fundamental beauty of the Outer Banks to which so many are attracted.

Figure 23. Aerial photograph of Ocean City Inlet, which formed in 1933 (Google Earth; NASA, 2005). The 1933 shoreline is shown in red, the photograph is from 2005. Jetties were built in 1933 and 1934 in an attempt to stabilize the inlet for navigation. The result was a disruption in the sediment transport processes and a large increase in erosion rates (up to 40 feet/year), reduction in island elevation, and loss of critical beach and dune habitats on Assateague Island down-drift of the inlet. The effects extend for approximately 9 miles southward from the inlet.